Conversions and Sig Figs Practice

1A. Indicate the number of significant figures in the following measurements.

a. 1098 g — 4

b. 1000. m — 4

c. 0.0048 mg — 2

d. 1050 g — 3 (no decimal)

1B. Round off the following numbers to 3 significant figures.

a. 312.54 — 313

b. 0.00031254 — 3.13×10^{-4}

c. 57635 — 5.76×10^{4}

d. 1098 — 1.10×10^{3}

e. 31.254×10^{-3} — 3.13×10^{-2}

f. 4.184 — 4.18

2. Convert the following numbers to or from scientific notation.

a. 312.54 — 3.1254×10^{2}

b. 0.00031254 — 3.1254×10^{-4}

c. 57000. — 5.7000×10^{4}

d. 5,701,000 — 5.701×10^{6}

e. 3,125.4 — 3.1254×10^{3}

f. 0.00041840 — 4.1840×10^{-4}

3. Perform the following operations and round off the answers to the correct number of significant figures.

(ex)

a. 97.381 + 4.2502 = 101.631
(3 dec. ✓ + 4 dec. → 3 dec.)

b. 21.901 − 13.21 = 8.69
(3 dec. − 2 dec. ✓ → 2 ✓ dec.)

c. 0.14 * 6.022×10^{23} = 8.4×10^{22}
(2 ✓ total * 4 total → 2 ✓ total)

d. (9.04 + 21.954) / 3.1416 = 9.866
(2 dec ✓ + 3 dec → 4 total)

(do after notes)

4. Complete the following unit conversions:

(ex.) 8.43 cm = 84.3 mm

$8.43\,\text{cm} \times \frac{1 \times 10^{-2}\,\text{m}}{1\,\text{cm}} \times \frac{1\,\text{mm}}{1 \times 10^{-3}\,\text{m}}$ ✓

294.5 nL = 2.945×10^{-5} cL

(30.99) / 3.1416
(4 total → 2 dec. → 5 total)

$294.5\,\text{nL} \times \frac{1 \times 10^{-9}\,\text{L}}{1\,\text{nL}} \times \frac{1\,\text{cL}}{1 \times 10^{-2}\,\text{L}}$ ✓

235.3 Mm = 2.353×10^{11} mm

$235.3\,\text{Mm} \times \frac{1 \times 10^{6}\,\text{m}}{1\,\text{Mm}} \times \frac{1\,\text{mm}}{1 \times 10^{-3}\,\text{m}}$ ✓

1.21 ft = 36.9 cm

$1.21\,\text{ft} \times \frac{1\,\text{m}}{3.28\,\text{ft}} \times \frac{1\,\text{cm}}{1 \times 10^{-2}\,\text{m}}$